IN THE CLAIMS:

Please re-write the claims as follows:

1.-5.   (Cancelled)

6.   (Currently Amended) A computer implemented method for managing data ~~to be~~
~~written~~ directed to a file served by a storage system while the file is undergoing a write
allocation procedure, the method comprising ~~the steps of~~:
        receiving a write operation comprising data ~~to be written~~ directed to the file;
        associating the received data with a buffer data control structure associated with
the file; ~~and~~
        marking the buffer data control structure associated with the file as being dirty for
a next consistency point;
        associating entries in a flags array of the buffer data control structure with a cur-
rent consistency point and with a next consistency point; and
        accessing entries associated with a current consistency point by indexing into the
flags array using a value calculated by performing a logical AND operation on a consis-
tency point counter and a value of 1.

7.   (Previously Presented) The computer implemented method of claim 6 wherein
the consistency point counter is monotonically increasing value that identifies a current
consistency point.

8.–11. (Cancelled)

12. (Currently Amended) A <u>computer implemented </u>storage system for using a networked environment capable of accepting write operations directed to files currently undergoing a write allocation procedure, the storage system comprising:

      means for receiving write operations containing data directed to the file;

      means for using a consistency point counter to label modified data as belonging to the current consistency point or to the next consistency point; and

      means for capturing data modified for the current consistency point in the current consistency point and not capturing data belonging to the next consistency point.

13. (Previously Presented) The storage system of claim 12 further comprising:

      means for associating the received data with a buffer data control structure; and

      means for setting a pointer in the buffer data control structure.

14. (Previously Presented) The storage system of claim 12 wherein a second pointer in the buffer data control structure points to data already written to the file.

15. (Currently Amended) A storage system adapted to enable write operations to a file undergoing write allocation, the storage system comprising:

      a write allocation process of a file system, the write allocation process adapted to associate received file data with a buffer data control structure upon receipt of a write operation directed to the file while the file is undergoing write allocation<u>; and</u>

      a consistency point counter used to label modified data as belonging to the current consistency point or to the next consistency point, and capturing data modified for the current consistency point in the current consistency point and not capturing data belonging to the next consistency point.

16. (Previously Presented) The storage system of claim 15 wherein the buffer data control structure comprises a flags array having an entry associated with a current consistency point and an entry associated with a next consistency point.

17.   (Original) The storage system of claim 16 wherein the entry associated with the cur-rent consistency point is identified by performing addition modulo addition to a consistency point counter.

18.   (Original) The storage system of claim 16 wherein the entry associated with the next consistency point counter is identified by performing addition modulo two to a consistency point counter.

19.   (Currently Amended) A storage system adapted to enable write operations to a file undergoing write allocation, the storage system comprising:

a write allocation process of a file system, the write allocation process adapted to associate received file data with a buffer data control structure upon receipt of a write operation directed to the file while the file is undergoing write allocation;

a flags array having an entry associated with a current consistency point and an entry associated with a next consistency point,; and

the entry associated with the current consistency point is accessed using an index value calculated by performing a logical AND operation on a consistency point counter and a value of 1.

20.   (Previously Presented) The storage system of claim 19 wherein the entry associated with the next consistency point is accessed using an index value calculated by subtracting from a value of 1 a result of performing a logical AND operation on a consistency point counter and a value of 1.

21.   (Currently Amended) A computer implemented method for managing data to be written directed to a file while the file is under-going a write allocation procedure, the method comprising the steps of:

determining if the buffer is dirty for a current consistency point;

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performing, in response to determining that the buffer is dirty for the current consistency point, write allocation of a buffer associated with the file for a current consistency point; and

freeing, if the buffer is dirty for a next consistency point, data written during the step of write allocation.

22.   (Original) The method of claim 21 wherein the step of determining if the buffer is dirty for a current consistency point further comprises the step of examining a flag in a buffer data control structure associated with the buffer.

23.   (Original)   The method of claim 22 wherein the flag is an entry in a flags array storing entries for the next consistency point and the current consistency point.

24.   (Original) The method of claim 23 wherein the entry for the next consistency point is identified by performing addition modulo two to a consistency point counter.

25.   (Original) The method of claim 23 wherein the entry for the current consistency point is identified by performing addition modulo two to a consistency point counter.

26.   (Original) The method of claim 21 further comprising the step of increasing a consistency point counter.

27.   (Currently Amended) A computer implemented buffer data control structure for use in a storage operating system permitting write operations to files undergoing a write allocation procedure, the buffer data control structure comprising:

a flags array having entries for flags associated with a current consistency point and entries associated with a next consistency point;

a first data pointer pointing to file data associated with the current consistency point; and

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8   a second data pointer pointing to file data associated with the next consistency

9 point; and

10   a consistency point counter used to label modified data as belonging to the current

11 consistency point or to the next consistency point, and capturing data modified for the

12 current consistency point in the current consistency point and not capturing data belong-

13 ing to the next consistency point.

1 28.   (Previously Presented) The computer implemented buffer data control structure

2 of claim 27 wherein the flags associated with a current consistency point are identified by

3 performing addition modulo two to a consistency point counter.

1 29.   (Previously Presented) The computer implemented buffer data control structure

2 of claim 27 wherein the flags associated with the next consistency point are identified by

3 performing addition modulo two to a consistency point counter.

1 30.   (Currently Amended) <u>The method as in claim 21, further comprising:</u> A com-

2 puter implemented method for processing a write operation to a file, while the file is un-

3 dergoing a write allocation procedure, without delaying the write operation, the method

4 comprising the steps of:

5 ────── receiving the write operation and information associated therewith, the write op-

6 eration directed to the file to be written to during a next consistency point; and

7   differentiating the information associated with the write <u>allocation procedure</u> op-

8 eration from information <u>contained in a new write operation</u> currently undergoing write

9 operation to capture data modified for the current consistency point in the current consis-

10 tency point and not capturing data <u>in the new write operation as it belongs</u> belonging to

11 the next consistency point.

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31.   (Currently Amended) The ~~computer implemented~~ method of claim 30 wherein the step of differentiating further comprises ~~the step of~~ modifying an inode associated with the file.

32.   (Currently Amended) The ~~computer implemented~~ method of claim 31 wherein the inode comprises an in core section and an on disk section.

33.   (Currently Amended) The ~~computer implemented~~ method of claim 31 wherein the step of modifying the inode further comprises ~~the step of~~ modifying a flag in a flag field of the inode.

34.   (Currently Amended) The ~~computer implemented~~ method of claim 33 wherein the modified flag indicates that the file was modified during <u>the write allocation proce-dure and so the modification belongs to the next</u> ~~a~~ consistency point.

35.   (Currently Amended) A computer implemented method for processing a write operation to a file, while the file is undergoing a write allocation procedure, without de-laying the write operation, the method comprising ~~the steps of~~:

          receiving the write operation and information associated therewith, the write op-eration directed to the file ~~to be written to~~ during a next consistency point;

          differentiating the information associated with the write operation from in-formation currently undergoing write operation;

          modifying a flag in a flag field of an inode associated with the file; and

          modifying a shadow index associated with the information.

36.   (Currently Amended) A computer system for processing a write operation to a file, while the file is undergoing a write allocation procedure, without delaying the write operation, the system comprising:

4   means for receiving the write operation and information associated therewith, the

5   write operation directed to the file ~~to be written to~~ during a next consistency point; and

6   means for differentiating the information associated with the write operation from

7   information currently undergoing write operation to capture data modified for the current

8   consistency point in the current consistency point and not capture data directed to be writ-

9   ten during the next consistency point.

1   37.   (Previously Presented) The computer system of claim 36 wherein means for dif-

2   ferentiating further comprises means for modifying an inode associated with the file.

1   38.   (Previously Presented) The computer system of claim 37 wherein the inode com-

2   prises an in core section and an on disk section.

1   39.   (Previously Presented) The computer system of claim 37 wherein means for

2   modifying the inode further comprises means for modifying a flag in a flag field of the

3   inode.

1   40.   (Previously Presented) The computer system of claim 39 wherein means for

2   modifying the flag further comprises means for indicating the file was modified during a

3   consistency point.

1   41.   (Currently Amended) A computer system for processing a write operation to a

2   file, while the file is undergoing a write allocation procedure, without delaying the write

3   operation, the system comprising:

4   means for receiving the write operation and information associated therewith, the

5   write operation directed to the file ~~to be written to~~ during a next consistency point; and

6   means for differentiating the information associated with the write operation from

7   information currently undergoing write operation;

8   means for differentiating has means for modifying an inode associated with the

9 file;

10   means for modifying a flag in a flag field of the inode; and

11   means for modifying a shadow index in the inode with the information.

1 42.   (Currently Amended) A computer implemented method for managing ~~data to be~~

2 ~~written to a file served by~~ a storage system, ~~the method~~ comprising ~~the steps of:~~

3   ~~having data to be written~~ receiving data directed to the file system, ~~the data re-~~

4 ~~ceived from a write operation~~;

5   labeling the data ~~modified in response to the write operation~~ as belonging to ~~the~~ a

6 current consistency point or to ~~the~~ a next consistency point; and

7   capturing, in the current consistency point, data belonging to the current consis-

8 tency point and not capturing data belonging to the next consistency point.

1 43.   (Previously Presented) The method of claim 42 further comprising:

2   selecting a time for writing the current consistency point to persistent storage;

3   locating buffer data which has been written to a buffer but which has not been

4 written to persistent storage before the time selected for the current consistency point to

5 be written to persistent storage; and

6   capturing the buffer data into the current consistency point.

1 44.   (Previously Presented) The method of claim 42 further comprising:

2   maintaining a flags array in a buffer data control structure, the flags array having

3 entries associated with a current consistency point and with a next consistency point.

1 45.   (Previously Presented) The method of claim 44 further comprising:

2   using a monotonically increasing consistency point (CP) counter to identify the

3 current CP as the current value of the CP counter, and the next CP as the value of the CP

4 counter plus 1.

1   46.   (Previously Presented) The method of claim 45 further comprising:

2   utilizing modulo-two arithmetic with the CP counter to perform an AND opera-

3   tion using "CP AND 1" to obtain a first value of 0 or 1; and

4   utilizing modulo-two arithmetic with the CP counter to perform an AND opera-

5   tion using "1-(CP AND 1)" to obtain a second value of 0 or 1, to produce flag values al-

6   ternating between values of "0" and "1" to represent current and next consistency points.

1   47.   (Previously Presented) The method of claim 42 further comprising:

2   associating the received data with a buffer data control structure by setting a

3   pointer in the buffer data control structure to a memory location associated with the re-

4   ceived data.

1   48.   (Previously Presented) The method of claim 47 further comprising:

2   marking the buffer data control structure as being dirty for a next consistency

3   point by setting a flag in a flags array of the buffer data control structure.

1   49.   (Previously Presented) The method of claim 42 further comprising:

2   differentiating entries associated with the current consistency point and the next

3   consistency point by performing modulo two addition to a consistency point counter.

1   50.   (Currently Amended) A computer implemented storage system to manage ~~data to~~

2   ~~be written~~ directed to a file served by a storage system, ~~the method~~ comprising ~~the steps~~

3   ~~of~~:

4   a time for writing a current consistency point to persistent storage;

5   a write operation, received after the time for writing the current consistency point,

6   providing ~~the~~ a new data ~~to be written~~ directed to the file;

7   ~~data modified in response to the write operation labeled as belonging to the cur-~~

8   ~~rent consistency point or to the next consistency point; and~~

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9 ~~an operating system to capture the data belonging to the current consistency point~~

10 ~~and not capturing the data belonging to the next consistency point.~~

11 buffer data which was written to a buffer but which has not been written to persis-

12 tent storage before the time for writing the current consistency point;

13 an operating system process to capture the buffer data into the current consistency

14 point; and

15 the operating system assigning the new data to a next consistency point.

1 51. (Cancelled)

1 52. (Previously Presented) The method of claim 50 further comprising:

2 a flags array maintained in a buffer data control structure, the flags array having

3 entries associated with a current consistency point and with a next consistency point.

1 53. (Previously Presented) The method of claim 52 further comprising:

2 a monotonically increasing consistency point (CP) counter to identify the current

3 CP as the current value of the CP counter, and the next CP as the value of the CP counter

4 plus 1.

1 54. (Previously Presented) The method of claim 53 further comprising:

2 modulo-two arithmetic utilized with the CP counter to perform an AND operation

3 using "CP AND 1" to obtain a first value of 0 or 1 and, the modulo-two arithmetic with

4 the CP counter to perform an AND operation using "1-(CP AND 1)" to obtain a second

5 value of 0 or 1, to produce flag values alternating between values of "0" and "1" to repre-

6 sent current and next consistency points.

1 55. (Previously Presented) The method of claim 50 further comprising:

2 a pointer in a buffer data control structure set to a memory location associated

3 with the received data to associate the received data with the buffer data control structure.

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56.   (Previously Presented) The method of claim 55 further comprising:

an operating system to mark the buffer data control structure as being dirty for a next consistency point by setting a flag in a flags array of the buffer data control structure.

57.   (Previously Presented) The method of claim 50 further comprising:

modulo two arithmetic to differentiate entries associated with the current consistency point and the next consistency point by performing modulo two addition to a consistency point counter.

58.   (Currently Amended) A computer readable media, comprising:

said computer readable media containing instructions for execution on a processor for the practice of a method of managing data ~~to be written~~ directed to a file served by a storage system, the method having the steps of,

having data ~~to be written~~ directed to the file, the data received from a write operation;

labeling data modified in response to the write operation as belonging to the current consistency point or to the next consistency point; and

capturing, in the current consistency point, data belonging to the current consistency point and not capturing data belonging to the next consistency point.

Please add new claims 59, *et seq.* as follows:

59.   (New) A computer implemented method for managing a file system, comprising:

receiving data directed to the file system;

labeling the data as belonging to a current consistency point or to a next consistency point; and

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5   allocating disk space for data belonging to the current consistency point, and not

6   allocating disk space for data belonging to the next consistency point.

7   60.   (New) The method of claim 59 further comprising:

8   selecting a time for writing the current consistency point to persistent storage;

9   locating buffer data which has been written to a buffer but which has not been

10   written to persistent storage before the time selected for writing the current consistency

11   point; and

12   capturing the buffer data into the current consistency point.

13   61.   (New) The method of claim 60 further comprising:

14   locating buffer data which has been written to a buffer after the time selected for

15   writing the current consistency point; and

16   capturing the buffer data into the next consistency point.

1   62.   (New) The method of claim 59 further comprising:

2   maintaining a flags array in a buffer data control structure, the flags array having

3   entries associated with a current consistency point and with a next consistency point.

1   63.   (New) The method of claim 62 further comprising:

2   using a monotonically increasing consistency point (CP) counter to identify the

3   current CP as the current value of the CP counter, and the next CP as the value of the CP

4   counter plus 1.

1   64.   (New) The method of claim 63 further comprising:

2   utilizing modulo-two arithmetic with the CP counter to perform an AND opera-

3   tion using "CP AND 1" to obtain a first value of 0 or 1; and

4   utilizing modulo-two arithmetic with the CP counter to perform an AND opera-

5   tion using "1-(CP AND 1)" to obtain a second value of 0 or 1, to produce flag values al-

6   ternating between values of "0" and "1" to represent current and next consistency points.

1   65.   (New) The method of claim 59 further comprising:

2   associating the received data with a buffer data control structure by setting a

3   pointer in the buffer data control structure to a memory location associated with the re-

4   ceived data.

1   66.   (New) The method of claim 65 further comprising:

2   marking the buffer data control structure as being dirty for a next consistency

3   point by setting a flag in a flags array of the buffer data control structure.

1   67.   (New) The method of claim 59 further comprising:

2   differentiating entries associated with the current consistency point and the next

3   consistency point by performing modulo two addition to a consistency point counter.

1   68.   (New) A computer implemented method for managing a file system, comprising:

2   means for receiving data directed to the file system;

3   means for labeling the data as belonging to a current consistency point or to a next

4   consistency point; and

5   means for allocating disk space for data belonging to the current consistency

6   point, and not allocating disk space for data belonging to the next consistency point.

1   69.   (New) A computer implemented file system, comprising:

2   a network adapter to receive data directed to the file system;

3   an operating system to label the data as belonging to a current consistency point

4   or to a next consistency point; and

5   a storage adapter to allocate disk space for data belonging to the current consis-

6   tency point, and not allocating disk space for data belonging to the next consistency

7   point.

1   70.   (New) The system of claim 69 further comprising:

2   a processor to select a time for writing the current consistency point to persistent

3   storage;

4   buffer data which has been written to a buffer but which has not been written to

5   persistent storage before the time selected for writing the current consistency point; and

6   the operating system to capture the buffer data into the current consistency point.

1   71.   (New) The system of claim 69 further comprising:

2   a flags array in a buffer data control structure, the flags array having entries asso-

3   ciated with a current consistency point and with the next consistency point.

1   72.   (New) The system of claim 71 further comprising:

2   a monotonically increasing consistency point (CP) counter to identify the current

3   CP as the current value of the CP counter, and the next CP as the value of the CP counter

4   plus 1.

1   73.   (New) The system of claim 72 further comprising:

2   a modulo-two arithmetic with the CP counter to perform an AND operation using

3   "CP AND 1" to obtain a first value of 0 or 1; and

4   the modulo-two arithmetic with the CP counter to perform an AND operation us-

5   ing "1-(CP AND 1)" to obtain a second value of 0 or 1, to produce flag values alternating

6   between values of "0" and "1" to represent current and next consistency points.

1   74.   (New) The system of claim 69 further comprising:

2   the operating system to associate the received data with a buffer data control

3   structure by setting a pointer in the buffer data control structure to a memory location as-

4   sociated with the received data.

1   75.   (New) The system of claim 74 further comprising:

2   the operating system to mark the buffer data control structure as being dirty for a

3   next consistency point by setting a flag in a flags array of the buffer data control struc-

4   ture.

1   76.   (New) The system of claim 69 further comprising:

2   the operating system to differentiate entries associated with the current consis-

3   tency point and the next consistency point by performing modulo two addition to a con-

4   sistency point counter.

1   77.   (New) A computer readable media, comprising:

2   said computer readable media containing instructions for execution on a processor

3   for the practice of a method of managing a file system, the method having the steps of,

4   receiving data directed to the file system;

5   labeling the data as belonging to a current consistency point or to a next consis-

6   tency point; and

7   allocating disk space for data belonging to the current consistency point, and not

8   allocating disk space for data belonging to the next consistency point.

1   78.   (New) A computer implemented method for managing a file system, comprising:

2   receiving data directed to the file system;

3   selecting a time for writing a current consistency point to persistent storage;

4   labeling the data as belonging to a current consistency point if received before the

5   time or to a next consistency point if received after the time;

6   allocating disk space for data belonging to the current consistency point, and not

7   allocating disk space for data belonging to the next consistency point;

8   locating first buffer data which has been written to a buffer but which has not

9   been written to persistent storage before the time and capturing the first buffer data into

10   the current consistency point;

11   locating second buffer data which has been written to a buffer after the time se-

12   lected for writing the current consistency point; and

13   capturing the second buffer data into the next consistency point.

1   79.   (New) A computer implemented file system, comprising:

2   a network adapter to receive data directed to the file system;

3   a processor to select a time for writing a current consistency point to persistent

4   storage;

5   an operating system to label the data as belonging to a current consistency point if

6   received before the time or to a next consistency point if received after the time;

7   a storage adapter to allocate disk space for data belonging to the current consis-

8   tency point, and not allocating disk space for data belonging to the next consistency

9   point;

10   a first buffer data which has been written to a buffer but which has not been writ-

11   ten to persistent storage before the time and the operating system to capture the first

12   buffer data into the current consistency point;

13   a second buffer data which has been written to a buffer but which has been writ-

14   ten to persistent storage after the time and the operating system to capture the second

15   buffer data into the current consistency point; and

16   a flags array in a buffer data control structure, the flags array having entries asso-

17   ciated with a current consistency point and with the next consistency point.

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